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IN THE CLAIMS

Please amend the claims as indicated by the amended claim set below.

1. (Original) An ultrasonic generator, comprising:

a source of electro-magnetic radiation that generates radiation having a plurality of different wavelengths;

an electromagnetic waveguide coupled to the source; and

at least one absorbing region in said waveguide that converts incident electromagnetic radiation of fewer than all the plurality of generated wavelengths from the source into ultrasonic waves.

2. (Original) A generator according to claim 1, wherein at least one of the wavelengths not converted by the absorbing region into electromagnetic radiation is used for light illumination.

3. (Currently Amended) A generator according to claim 1 ~~or claim 2~~, wherein said waveguide is formed into a guidewire.

4. (Currently Amended) A generator according to claim 1 ~~any of claims 1-3~~, wherein said generator is adapted to be inserted into a body.

5. (Currently Amended) A generator according to claim 1 ~~any of claims 1-4~~, wherein said waveguide comprises an optical fiber.

6. (Original) A generator according to claim 5, wherein said fiber includes a non-acoustic optical fiber sensor.

7. (Original) A generator according to claim 5, wherein said absorbing region comprises a segment that is added to said fiber.

8. (Original) A generator according to claim 5, wherein said absorbing region comprises a doping of a core or damage to the core of said fiber.

9. (Currently Amended) A generator according to claim 1~~any of claims 1-8~~, wherein said absorbing region is optically controllable to change at least one of said criterion and its absorption.

10. (Currently Amended) A generator according to claim 1~~any of claims 1-9~~, wherein said source comprises a laser source.

11. (Currently Amended) A generator according to claim 1~~any of claims 1-10~~, wherein said source comprises a coupler for a laser source.

12. (Currently Amended) A generator according to claim 1~~any of claims 1-10~~, wherein said source comprises a spectral filter.

13. (Currently Amended) A generator according to claim 1~~any of claims 1-12~~, wherein said at least one absorbing region comprises at least two absorbing regions.

14. (Currently Amended) A generator according to claim 1~~any of claims 1-12~~, wherein said at least one absorbing region comprises at least three absorbing regions.

15. (Currently Amended) A generator according to claim 1~~any of claims 1-12~~, wherein said at least one absorbing region comprises at least four absorbing regions.

16. (Original) A generator according to claim 13, wherein said at least two regions have same absorbing characteristics.

17. (Original) A generator according to claim 13, wherein said at least two regions have different absorbing characteristics.

18. (Currently Amended) A generator according to claim 13~~any of claims 13-17~~, wherein said at least two regions have at least one different absorption selectivity criterion.

19. (Currently Amended) A generator according to claim 13~~any of claims 13-17~~, wherein said at least two regions have same selectivity.

20. (Currently Amended) A generator according to claim 13~~any of claims 13-17~~, wherein the absorption properties of said at least two regions are adjusted so as to achieve a desired effect on said ultrasonic waves.

21. (Currently Amended) A generator according to claim 13~~any of claims 13-17~~, wherein said at least two regions are spaced apart to achieve a desired effect on said ultrasonic waves.

22. (Original) A generator according to claim 21, wherein said effect is selection of a wavelength spectrum.

23. (Currently Amended) A generator according to claim 20~~or claim 21~~, wherein said effect is a selection of a spatial field distribution.

24. (Original) A generator according to claim 21, wherein said effect is a selection of an acoustic envelope shape.

25. (Currently Amended) A generator according to claim 1~~any of claims 1-24~~, wherein said absorbing region is a volume absorber that absorbs said radiation along its length in a direction of propagation of said radiation.

26. (Original) A generator according to claim 25, wherein said absorbing region has axially uniform absorption characteristics, along the axis of said waveguide.

27. (Original) A generator according to claim 25, wherein said absorbing region has axially non-uniform absorption characteristics, along the axis of said waveguide.

28. (Original) A generator according to claim 27, wherein said absorbing region has stepped absorption characteristics, along the axis of said waveguide.

29. (Currently Amended) A generator according to claim 1~~any of claims 1-28~~, wherein said absorbing region is a solid absorber.

30. (Currently Amended) A generator according to claim 1~~any of claims 1-28~~, wherein said absorbing region is a fluid absorber.

31. (Currently Amended) A generator according to claim 1~~any of claims 1-30~~, wherein said waveguide comprises an acousto-optical modulator portion that modulates light waves responsive to an acoustic field.

32. (Original) A generator according to claim 31, comprising an optical detector coupled to said waveguide which generates a signal responsive to said acoustic field.

33. (Original) A generator according to claim 32, wherein said optical detector detects radiation that passes through said absorbing region unabsorbed.

34. (Currently Amended) A generator according to claim 32~~or claim 33~~, comprising a signal processor that reconstructs an image from said signal.

35. (Original) A generator according to claim 34, wherein said image is a one dimensional image.

36. (Original) A generator according to claim 34, wherein said image is a two dimensional image.

37. (Currently Amended) A generator according to claim 32~~or claim 33~~, comprising a signal processor operative to reconstruct a tissue characterization from said signal.

38. (Currently Amended) A generator according to claim 32~~or claim 33~~, comprising a signal processor operative to reconstruct a distance from said signal.

39. (Currently Amended) A generator according to claim 1~~any of claims 1-38~~, wherein said source provides at least one wavelength having a high power level that passes through said absorbing region substantially unabsorbed.

40. (Currently Amended) A generator according to claim 1~~any of claims 1-39~~, wherein the source generates radiation having at least three different wavelengths.

41. (Currently Amended) A generator according to claim 1~~any of claims 1-39~~, wherein the source generates radiation having at least four different wavelengths.

42. (Currently Amended) A generator according to claim 1~~any of claims 1-41~~, comprising a plurality of waveguides arranged in a phased-array and a controller that controls said source to activate said array as a phased-array.

43. (Currently Amended) A generator according to claim 1~~any of claims 1-41~~, wherein said ultrasonic wave is operative to be steered in space by said generator without moving the absorbing region.

44. (Currently Amended) A generator according to claim 1~~any of claims 1-41~~, wherein said generator comprises only a single waveguide.

45. (Currently Amended) A generator according to claim 1~~any of claims 1-44~~, comprising an ultrasonic absorber, which spatially shapes said ultrasonic waves.

46. (Currently Amended) A generator according to claim 1~~any of claims 1-45~~, comprising a controller operative to control said source.

47. (Original) A generator according to claim 46, wherein said controller synchronizes an operation of said generator with a separate treatment device.

48. (Currently Amended) A generator according to claim ~~46 or 47~~, wherein said controller synchronizes an operation of said generator with a separate imaging device.

49. (Currently Amended) A generator according to claim 46 ~~or 47~~, wherein said controller reads out optical signals received via said waveguide.

50. (Currently Amended) A generator according to claim 1 ~~any of the preceding claims~~, wherein the at least one absorbing region comprises a volumetric absorption region which absorbs radiation along its length in a direction of propagation of said radiation.

51. (Original) A generator according to claim 50, comprising a reflector for reflecting at least a portion of the light that passes once through said absorber, to pass at least a second time through said absorber.

52. (Original) A generator according to claim 51, comprising a second reflector for reflecting at least a portion of the light that passes twice through said absorber, to pass at least a third time through said absorber.

53. (Currently Amended) A generator according to claim 1 ~~any of the preceding claims~~, wherein a second one of said wavelengths interacts with said waveguide other than at said at least one absorbing region, to generate ultrasound.

54. (Original) A generator according to claim 53, wherein said second generated ultrasound has an intensity high enough to attack adjacent plaque in a blood vessel.

55. (Currently Amended) A generator according to claim 1 ~~any of the preceding claims~~, wherein a second one of the wavelengths exits said waveguide at a high enough power to interact with in-vivo biological tissue.

56. (Currently Amended) A generator according to claim 1 ~~any of the preceding claims~~, wherein said waveguide is flexible.

57. (Currently Amended) A generator according to claim 1 ~~any of the preceding claims~~, wherein said waveguide is rigid.

58. (Currently Amended) A generator according to claim 1~~any of the preceding claims~~, wherein said waveguide is formed into a catheter.

59. (Currently Amended) A generator according to claim 1~~any of the preceding claims~~, wherein the at least one absorbing region converts incident electromagnetic radiation of only a single of the generated wavelengths from the source into ultrasonic waves.

60. (Original) An acoustic generator, comprising:

a source of electro-magnetic radiation;

a waveguide coupled to said source; and

at least one volumetric absorbing region defined in said waveguide, which absorbs radiation along its length in a direction of propagation of said radiation,

wherein said absorbing region converts said radiation into an ultrasonic acoustic field.

61. (Original) A generator according to claim 60, wherein said absorber is uniformly absorbing along its length.

62. (Original) A generator according to claim 60, wherein said absorber is non-uniformly absorbing along its length.

63. (Original) A generator according to claim 62, wherein said non-uniformity is designed to achieve a certain absorption profile.

64. (Original) A generator according to claim 63, wherein said absorption profile is designed to achieve a substantially uniform energy deposition along said absorber.

65. (Original) A generator according to claim 62, wherein said non-uniformity is stepped, defining a plurality of contiguous uniform sub-regions with different absorbing characteristics.

66. (Original) A generator according to claim 62, wherein said non-uniformity is stepped, defining a plurality of non-contiguous uniform sub-regions with different absorbing characteristics.

67. (Currently Amended) A generator according to claim 60~~any of claims 60-66~~, comprising a reflector for reflecting at least a portion of the light that passes once through said absorber, to pass at least a second time through said absorber.

68. (Original) A generator according to claim 67, comprising a second reflector for reflecting at least a portion of the light that passes twice through said absorber, to pass at least a third time through said absorber.

69. (Original) A generator according to claim 67, wherein said second reflector is polarization discriminating and comprising a polarization rotator.

70. (Currently Amended) A generator according to claim 60~~any of claim 60-69~~, wherein half a thickness of said absorption area absorbs less than 80% of light absorbed by said absorbing area.

71. (Currently Amended) A generator according to claim 60~~any of claim 60-70~~, wherein said absorbing region has a non-uniform cross-section.

72. (Currently Amended) A generator according to claim 60~~any of claim 60-70~~, wherein said absorbing region does not fill a cross-section of said waveguide.

73. (Currently Amended) A generator according to claim 60~~any of claim 60-70~~, wherein said waveguide guides substantially all radiation provided in waveguide to said absorbing region.

74. (Original) A generator according to claim 73, wherein said guidance comprises guiding said radiation to have a substantially uniform cross-section along said absorbing region.

75. (Currently Amended) A generator according to claim 60~~any of claim 60-74~~, wherein said absorbing region selectively absorbs only some of said radiation.

76. (Currently Amended) A generator according to claim 60~~any of claim 60-75~~, comprising a plurality of absorbing regions.

77. (Original) A generator according to claim 76, wherein said absorbing regions are arranged along an axis of said waveguide.

78. (Original) A generator according to claim 76, wherein said absorbing regions are arranged in a trans-axial direction of said waveguide.

79. (Currently Amended) A generator according to claim 76~~any of claims 76-78~~, wherein said multiple absorbing regions have same absorption characteristics.

80. (Currently Amended) A generator according to claim 76~~any of claims 76-79~~, wherein at least one of said multiple absorbing regions has a different absorption characteristics from another one of said regions.

81. (Currently Amended) A generator according to claim 76~~any of claims 76-80~~, wherein at least two of said multiple regions at least partially overlap.

82. (Currently Amended) A generator according to claim 76~~any of claims 76-81~~, wherein at least one of said multiple regions is selectively addressable to control a direction of said ultrasonic waves.

83. (Currently Amended) A generator according to claim 76~~any of claims 76-81~~, wherein at least one of said multiple regions is selectively addressable to control a frequency of said ultrasonic waves.

84. (Currently Amended) A generator according to claim 60~~any of claims 60-83~~, wherein said waveguide is an optical fiber.

85. (Currently Amended) A generator according to claim 60~~any of claims 60-84~~, wherein said absorbing region has sharp boundaries.

86. (Currently Amended) A generator according to claim 60~~any of claims 60-84~~, wherein said absorbing region has at least one blurred boundary.

87. (Original) A method of designing an ultrasonic generator powered by electromagnetic radiation, comprising:

determining a desired property of a generated ultrasonic wave; and

calculating a spatial absorbing profile of at least one transduction region of said generator to achieve said desired property.

88. (Original) A method of designing an ultrasonic generator powered by electromagnetic radiation, comprising:

determining a desired property of a generated ultrasonic wave; and

calculating at least one of a geometric characteristic and a physical characteristic of at least two transduction regions of said generator to achieve said desired property.

89. (Original) A method according to claim 88, wherein said geometric characteristic comprises a length of at least one of said regions.

90. (Currently Amended) A method according to claim 88~~ or claim 89~~, wherein said geometric characteristic comprises a spacing between said regions.

91. (Currently Amended) A method according to claim 88~~any of claims 88-90~~, wherein said geometric characteristic comprises a number of said regions.

92. (Currently Amended) A method according to claim 88~~any of claims 88-91~~, wherein said physical characteristic comprises an optical density of at least one of regions.

93. (Currently Amended) A method according to claim 88~~any of claims 88-92~~, wherein said physical characteristic comprises a uniformity of density of at least one of regions.

94. (Currently Amended) A method according to claim 88~~any of claims 88-93~~, wherein said property comprises a characteristic wavelength, for a given driving scheme.

95. (Currently Amended) A method according to claim 88~~any of claims 88-94~~, wherein said property comprises a characteristic wavelength power spectra, for a given driving scheme.

96. (Currently Amended) A method according to claim 88~~any of claims 88-95~~, wherein said property comprises a spatial propagation profile, for a given driving scheme.

97. (Currently Amended) A method according to claim 88~~any of claims 88-96~~, wherein said property comprises a characteristic acoustic envelope for a given driving scheme.

98. (Currently Amended) A method according to claim 88~~any of claims 88-97~~, wherein said calculating is performed prior to manufacture of said generator.

99. (Currently Amended) A method according to claim 88~~any of claims 88-97~~, wherein said calculating is performed after manufacture and prior to use of said generator.

100. (Original) A method according to claim 99, comprising effecting at least one of said characteristics by selecting an irradiation wavelength of said absorbing areas.

101. (Original) A method according to claim 99, comprising effecting at least one of said characteristics by optically activating at least one of said absorbing areas.

102. (Original) An acoustic generator, comprising:

a source of electro-magnetic radiation; and

a plurality of waveguides coupled to said source, each waveguide defining an absorbing region that converts said radiation into an ultrasonic acoustic field,

wherein said source irradiates at least two of said plurality of waveguide at a same time such that fields of said two waveguides interact.

103. (Original) A generator according to claim 102, comprising a controller, coupled to said source and operative to selectively control each of said acoustic fields.

104. (Original) A generator according to claim 103, wherein said controller sets a relative phase between said two fields.

105. (Currently Amended) A generator according to claim 103~~any of claims 103-104~~, wherein said controller sets a relative pulse rate between pulsed light provided in said two waveguides.

106. (Currently Amended) A generator according to claim 103~~any of claims 103-104~~, wherein said controller sets a relative pulse phase between pulsed light provided in said two waveguides.

107. (Currently Amended) A generator according to claim 103~~any of claims 103-106~~, wherein said controller sets a relative amplitude between said two waveguides.

108. (Currently Amended) A generator according to claim 102~~any of claims 102-107~~, wherein said fields interact to obtain a desired propagation direction.

109. (Currently Amended) A generator according to claim 102~~any of claims 102-108~~, wherein said fields interact to enhance power in a certain wavelength.

110. (Original) An ultrasonic generator, comprising:

a source of electro-magnetic radiation that generates radiation having a plurality of propagating components;

an electromagnetic waveguide; and

an absorbing region in said waveguide that converts incident electromagnetic radiation into ultrasonic waves, wherein only one of said components interacts with said absorbing region to create ultrasound.

111. (Original) A generator according to claim 110, wherein a second one of said components interacts with said waveguide other than at said absorber to generate ultrasound.

112. (Original) A generator according to claim 110, wherein said second generated ultrasound has an intensity high enough to attack adjacent plaque in a blood vessel.

113. (Currently Amended) A generator according to claim 110~~any of claims 110-112~~, comprising an optical acoustic detector in said waveguide and wherein an additional one of said components interacts with said waveguide to detect an ambient ultrasonic field.

114. (Currently Amended) A generator according to claim 110~~any of claims 110-113~~, wherein a second one of said components exits said waveguide at a high enough power to interact with in-vivo biological tissue.

115. (Currently Amended) A generator according to claim 110~~any of claims 110-114~~, wherein said different components have different polarizations.

116. (Currently Amended) A generator according to claim 110~~any of claims 110-114~~, wherein said different components have different wavelengths.

117. (Original) An ultrasonic probe, comprising:

a waveguide having an axis along which electromagnetic radiation propagates and defining an absorber that converts said radiation into forward propagating ultrasound that further propagates in a general direction of said axis; and

an output port that outputs light carries in a same direction as said ultrasound.

118. (Original) A probe according to claim 117, wherein said output port is formed in said waveguide.

119. (Currently Amended) A probe according to claim 117~~ or claim 118~~, comprising a forward looking ultrasonic detector defined in said waveguide.

120. (Original) An acoustic generator, comprising:

a source of electro-magnetic radiation;

a waveguide coupled to said source; and

a plurality of spaced apart absorbing regions defined in said waveguide,

wherein each of said absorbing region converts said radiation into an ultrasonic acoustic field.

121. (Currently Amended) A generator according to claim 60~~any of claims 60-86, 102-116 or 120~~, wherein said waveguide is flexible.

122. (Currently Amended) A generator according to claim 60~~any of claims 60-86, 102-116 or 120~~, wherein said waveguide is rigid.

123. (Currently Amended) A generator according to claim 60 ~~any of claims 60-86, 102-116 or 120-122~~ wherein said waveguide is formed into a guidewire.

124. (Currently Amended) A generator according to claim 60~~any of claims 60-86, 102-116 or 120-122~~, wherein said waveguide is formed into a catheter.

125. (Original) A generator according to claim 124, wherein said catheter is a balloon catheter.